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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,926	07/10/2003	Hideaki Yamasaki	010986.52578US	9914

23911 7590 08/24/2007
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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

MAIL DATE	DELIVERY MODE
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08/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/615,926	Applicant(s) YAMASAKI ET AL.	
	Examiner Jeffrie R. Lund	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-33, 36-38 and 40-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-33, 36-38, and 40-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 36 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. The amendment to claim 30 incorporates the limitations found in claim 36.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 30-33, 36-38, and 40-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 30 and 51 are indefinite because they both contain two nodes and it is not clear to which node "said node" refers.

Claim 37 and 52 are indefinite because it is not possible for the gas analyzer to be both inline with the source gas supply line and parallel to or branched from the gas source supply line.

Claims 47 and 48 are indefinite because it is not clear to which node "said node" refers.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

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obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 30-33, 36, 38, 40, 41, 47-49, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al, JP 2001-214270, in view of Ono, JP 47-10730.

Tomita et al teaches a CVD apparatus that includes: a reaction chamber 1 evacuated, to a pressure of less than 667 Pa, by an evacuating system 3 and supporting a substrate 6 on a support 7; a source bottle 16-19 containing a liquid source material and forming a source gas therein as a result of vaporizing caused by a vaporizing gas (Ar) supplied via a first MFC 33-36 and vaporizing gas source line 20-23; a source gas supply lines 24-27 and 2 supplying said source gas from the source bottles 16-19 to said reaction vessel 1; a diluting inert gas supplied via a second MFC 37 and connected to the source gas supply line 2 at a node (junction of gas supply line 2 and source gas supply lines 24-27); an infrared gas analyzer 46 located downstream

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of node (junction of gas supply line 2 and source gas supply lines 24-27) and upstream of the node 11; a bypass gas line 9 connected to the source gas supply line 2 at node 11 via valve 13; and a controller 47 controlling the first MFC 33-36 and second MFC 37, which control the flow rate of the gases as a result of the measurement of the concentration analyzer 46. (Figure, paragraph 20+)

Tomita et al differs from the present invention in that Tomita et al does not teach that the gas analyzer is inline between the source bottle and node; or that the source gas is $W(CO)_6$.

Ono teaches a gas analyzer 27 provided in the source supply line. (Figure 2)

The motivation for moving the gas analyzer of Tomita et al from a branch line and placing the gas analyzer inline with the gas source supply line, as taught by Ono, is to provide gas to the analyzer more directly, thereby decreasing the response time of the controller and improving the uniformity of the deposited layer. Furthermore, it has been held that the rearrangement of parts is obvious (see *In re Japikse* 86 USPQ 70).

The motivation for supplying $W(CO)_6$ to the reaction vessel of Tomita et al is to deposit a layer containing tungsten on the substrate as is well known in the art.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the analyzer of Tomita et al and place it inline with the gas source supply line as taught by Ono; and to supply $W(CO)_6$ to the reaction vessel.

7. Claim 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al and Ono as applied to claims 30-33, 36, 38, 40, 41, 47-49, and 51 above, and further in view of Tokai et al, US Patent Application Publication 2002/0014700 A1.

Tomita et al and Ono differ from the present invention in that they not teach that: the controller receives input from a manometer (pressure sensor) and corrects the measured concentration based on the pressure.

Tokai et al teaches a coating chamber that includes: a controller 38 that controls the gas sources 14 based on input from concentration detectors 36, 37 and a pressure sensor 60.

The motivation for controlling the concentration of the source gas in the apparatus of Tomita et al and Ono using signals from both the concentration detector and pressure sensor as taught by Tokai et al is to control the source flows based on their concentrations, adjusted for the pressure.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the gas sources of Tomita et al and Ono using information supplied by the concentration detector and pressure sensor as taught by Tokai et al.

8. Claims 42 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al and Ono as applied to claims 30-33, 36, 38, 40, 41, 47-49, and 51 above, and further in view of Satake et al, JP 2001-234348.

Tomita et al and Ono differ from the present invention in that they do not teach that the concentration detector is a FTIR.

Satake et al teaches a coating chamber that includes a FTIR concentration detector 20. (Abstract, figure 7)

The motivation for using a FTIR concentration detector in the apparatus of

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Tomita et al and Ono is to provide a specific concentration detector as required but only generically disclosed.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the FTIR concentration detector of Satake et al in the apparatus of Tomita et al and Ono.

9. Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al and Ono as applied to claims 30-33, 36, 38, 40, 41, 47-49, and 51 above, and further in view of Holst et al, US Patent Application Publication 2003/0056723 A1.

Tomita et al and Ono differ from the present invention in that they do not teach that the concentration detector is a non-dispersion infrared spectrometer (NDIR).

Holst et al teaches using a NDIR concentration detector 20 to detect a concentration of material in a gas flow. (Paragraph 55)

The motivation for using a NDIR concentration detector in the apparatus of Tomita et al and Ono is to provide a specific concentration detector as required but only generically disclosed.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the NDIR concentration detector of Holst et al in the apparatus of Tomita et al and Ono.

10. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al and Ono as applied to claims 30-33, 36, 38, 40, 41, 47-49, and 51 above, and further in view of O'Neill et al, JP 07-188932.

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Tomita et al and Ono differs from the present invention in that they do not teach that the gas analyzer is located upstream of the node (diluting gas line and source gas line node).

O'Neill et al teaches a processing apparatus that includes a gas analyzer 46 located upstream of the node (diluting gas line and source gas line node).

The motivation for moving the gas analyzer of Tomita et al and Ono to a position upstream of the node (diluting gas line and source gas line node) as taught by O'Neill et al is to monitor the source gas without the inert gas, or to provide an alternate and equivalent location for the gas analyzer. Furthermore, it has been held that the rearrangement of parts is obvious. (See In re Japikse 86 USPQ 70)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the gas analyzer of Tomita et al and Ono as taught by O'Neill et al.

Response to Arguments

11. Applicant's arguments with respect to claims 30-33, 36-38, and 40-52 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

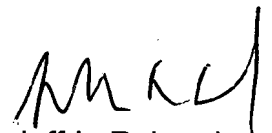
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (10:00 am - 9:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
8/20/07